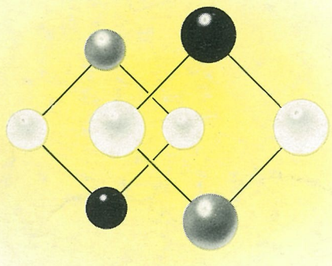
# KMT - 19



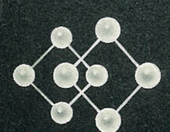
INDUSTRY AND

**KENNAMETAL**

*...Partners in Progress*

# 1957

## ANNUAL REPORT



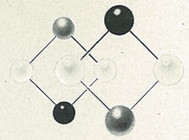
**KENNAMETAL** *Inc.*

LATROBE, PENNSYLVANIA

*This annual report and the financial statements contained herein are submitted to the shareholders of the Company for their general information and not in connection with any sale, or offer to sell, or solicitation of any offer to buy any securities.*

Whenever the following names appear in this report, they are used as Trade-Marks: Kennametal, Kentanium, Kendex, Kenface, Kengrit.

# KENNAMETAL *Inc.* and subsidiaries
# *1957* ANNUAL REPORT



## board of directors

Philip M. McKenna — Donald C. McKenna
Andrew Gahagan — Alex G. McKenna
George G. Schuster

## officers

Philip M. McKenna.....*President*
Alex G. McKenna.....*Executive Vice President*
Donald C. McKenna.....*Vice President*
John C. Redmond.....*Vice President*
Joseph L. Kane.....*Vice President*
George J. Heideman.....*Treasurer*
Charles R. Van Norden.....*Secretary*
Richard J. Flickinger.....*Assistant Secretary*

## corporate data

EXECUTIVE OFFICES
Latrobe, Pa.

PLANT LOCATIONS
Latrobe, Kingston Station and Chestnut Ridge, Westmoreland County, Pa. — Bedford, Pa.
Oak Park, Mich. — Willoughby, Ohio
Fallon, Nevada — Port Coquitlam, B. C.

AUDITORS
Arthur Andersen & Co., Pittsburgh, Pa.

LEGAL COUNSEL
Smith, Buchanan, Ingersoll, Rodewald & Eckert, Pittsburgh, Pa.
Des Jardins, Robinson, Tritle & Schenk, Cincinnati, Ohio
Reed, Smith, Shaw & McClay, Pittsburgh, Pa.

TRANSFER AGENT
Mellon National Bank and Trust Company
Pittsburgh, Pa.

REGISTRAR
Fidelity Trust Company, Pittsburgh, Pa.

## shareholders' annual meeting

Scheduled for Monday, September 9, 1957, at Latrobe, Pa. Notice of meeting will be mailed August 16, 1957, to each shareholder of record on August 5, 1957. Proxies will be solicited by the management.

# KENNAMETAL *Inc.* and subsidiaries

## highlights

**fiscal year ending June 30**

| | 1957 | 1956 | Increase (Decrease) |
|---|---|---|---|
| Sales and other income | $24,374,335 | $21,669,208 | $2,705,127 |
| Net income before taxes (other than payroll taxes) | 5,417,146 | 4,992,391 | 424,755 |
| Taxes (other than payroll) | 2,976,837 | 2,524,968 | 451,869 |
| Net income for the year | 2,440,309 | 2,467,423 | (27,114) |
| Return on sales | 10.0% | 11.4% | (1.4%) |
| Per common share | $4.07 | $4.12 | ($0.05) |
| Dividends paid per share | $1.00 | $1.00 | — |
| No. of employees at June 30 | 1712 | 1654 | 58 |
| Total assets | $18,062,124 | $17,251,980 | $ 810,144 |
| Working capital | 9,171,578 | 8,888,368 | 283,210 |
| Capital expenditures | 1,827,937 | 978,458 | 849,479 |
| Net worth | 14,984,947 | 13,323,631 | 1,661,316 |
| Per common share | 25.01 | 22.23 | 2.78 |



## president's letter to the shareholders

Although net income declined slightly, the year 1957 was one of significant progress and growth. The facing page gives the financial highlights of the year, compared with fiscal 1956. Sales and other income, the highest in our history, increased $2,705,127 over 1956, and net income before taxes was $424,755 greater than in the previous year, but taxes on income were disproportionately lower last year because of the large portion of our income which then arose from tungsten mining (subject to percentage depletion). Because of the tax effect of this shift in income, net income for the year was down $27,114, and amounted to $4.07 per share, five cents per share less than in 1956.

The ending of Government stockpiling of domestic tungsten production during the year is a step of major importance to us, our industry and the nation. An industrial society is strengthened by wisely using and developing its natural resources, and not by sterilizing them in futile hoarding. Since 1940, a major part of all tungsten produced domestically, or imported, has been acquired by the Government, and (as stated in a recent Congressional report) an "excessive surplus" has been stockpiled. Now, as such purchases are stopped, industry can rely upon a greater share of the available tungsten, at a more reasonable price. Creative minds can now use it to increase production and improve product performance in many new fields. We are facing, I believe, a period in which tungsten, embodied in our present products and in new products which we intend to make, will be used in ever-increasing quantities.

We have strengthened ourselves internally during the year in many ways. We have added substantially to our plants, laboratories, equipment and personnel, so that we may produce efficiently greater volumes of our products. These developments are set forth in greater detail in the following pages. This program of plant expansion required the expenditure of over $1,800,000 during the year, and absorbed nearly all of our undistributed earnings.

Vigor, determination and imagination will mark our efforts during the coming year. We have problems, but we also have plans. We are confident that we can meet the challenge of the new opportunities which lie ahead. The people of Kennametal join me in pledging further progress to all our industry partners and to all our shareholders.

Yours very sincerely,

Philip M. McKenna

*President*

Latrobe, Pa.
August 3, 1957

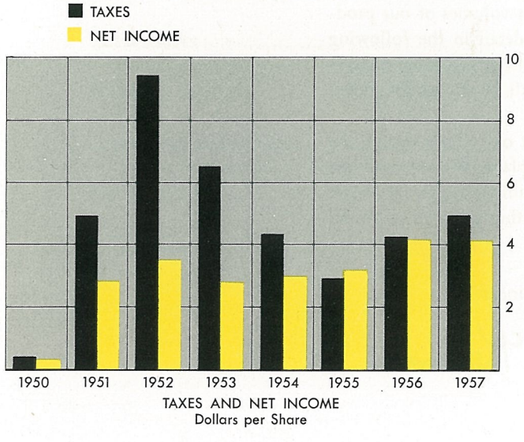
# financial and operating review—*1957*

## *Sales, Earnings and Dividends*

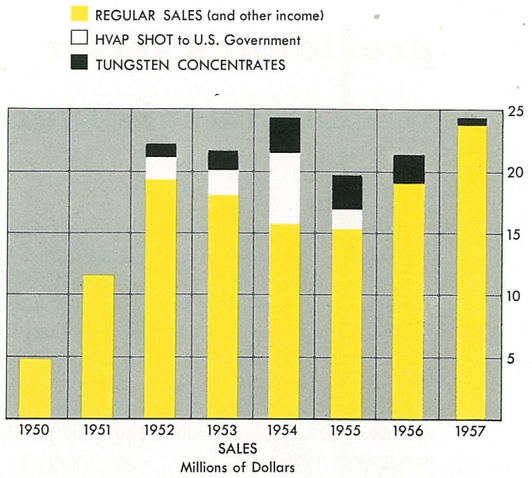
Business held at a high level throughout the fiscal year, reaching a peak in the third quarter and then declining slightly. Sales and other income surpassed all previous years, and amounted to $24,374,335, as compared with $21,669,208 in 1956. Net income before taxes was $424,755 higher than in 1956, but this increase did not carry through to net because 1957 taxes increased $451,869. As a result, net income for the year was very close to last year, and amounted to $2,440,309, or $4.07 per share, as against $2,467,423, or $4.12 per share.

Major causes for this change in operating results and the failure to increase net income in proportion to sales were discontinuance of tungsten mining, and a decline in the market price of tungsten which necessitated an inventory write-down at the year end. In 1956, our tungsten mine contributed $1.28 per share to net income, whereas there was a loss from this source this year. Also, the change in income source, from tungsten mining to other operations, increased the over-all impact of Federal taxes, as net income from the mine, under percentage depletion, was subject to a tax rate about half that applying to our non-mining operations.

Quarterly dividends of 25 cents per share were paid during the year, amounting to $599,225 on the 599,225 shares outstanding throughout the year. Beginning in November, quarterly dividends were paid a month earlier than in the past. As no meeting of Directors was scheduled for July, dividend action was taken at the June meeting, at which time a dividend of 30 cents per share, payable August 20, 1957, was declared.



TAXES AND NET INCOME
Dollars per Share



SALES
Millions of Dollars

## *Working Capital*

Net working capital was $9,171,578 at June 30, 1957, as compared to $8,888,368 at the end of 1956, an increase of $283,210. The flow of funds resulting in this increase is shown below:

| | | |
|---|---|---|
| Funds were obtained from— | | |
| Net income for the year..... | $2,440,309 | |
| Provision for depreciation and amortization ..... | 654,522 | |
| Amortization of goodwill, trademarks, etc. ..... | 120,000 | $3,214,831 |
| Funds were used for— | | |
| Dividends paid and declared | $ 778,993 | |
| Net additions to fixed assets | 1,827,937 | |
| Reduction in long-term debt | 250,000 | |
| Prepaid expenses, etc..... | 74,691 | 2,931,621 |
| Increase in working capital ..... | | $ 283,210 |

## *Plant Expansion*

As shown above, earnings not distributed as dividends were largely reinvested in the business in the form of new plant, machinery and equipment. Net additions to fixed assets were the highest in our history.

Expenditures for plant and equipment include two modern manufacturing buildings at our new Chestnut Ridge site which add 48,000 square feet of floor space, additions to our plants at Detroit and Bedford to double powder forming and sintering capacity at those locations,



# KENNAMETAL *Inc.* and subsidiaries

and related investments in furnaces and other equipment for these plants. A dam and reservoir to provide sufficient water and fire protection for our facilities at Chestnut Ridge have been started, and additional amounts have been spent on waste disposal at our Kingston Station plant. Modern machine tools were also added during the year. The production of niobium and tantalum metal required moderate expenditures for additional equipment.

Current production problems have taken up so much of our existing laboratory facilities that it was deemed essential this year to start construction of a new laboratory which can be devoted more fully to advanced research and development work. This laboratory, to be known as the Philip M. McKenna Laboratory, is being built near Greensburg, about twelve miles from Latrobe.

## *Subsidiary Companies*

At our Nevada Scheelite tungsten mine, operations were suspended in November when the Government stopped buying for the stockpile. Clean-up operations were completed by early March, when the mine was put on a stand-by basis. Exploration work prior to the close-down revealed the presence of additional ore reserves and, if economic conditions at some future date warrant, the mine can be put back into production.

We plan to make use of the Nevada Scheelite organization and some of the mill facilities to further our decentralization policy and to expand our basic production facilities. Accordingly, we are now installing equipment for further beneficiation of tungsten minerals to the stage of high-purity macrocrystalline tungsten carbide.

Because of the above changes, it was considered advisable to liquidate Nevada Scheelite Corp., transfer its assets to the parent, and continue to operate it as a division. This reorganization was effected in April, 1957.

In our last annual report, the incorporation of Kennametal Overseas Corp. in Panama was announced, and this subsidiary sold an increased amount of Kennametal products outside the United States during this past year. An Italian company, Ca. Me. S. (Carburi Metallici Sinterizzati), in which Overseas has 51% ownership, was formed during the year, and a sintering plant completed in Milan, Italy. Since May, it has been producing Kennametal cemented carbides from powder furnished by us. This plant should improve service to our European customers and enable us to compete more effectively abroad.

Our other subsidiary, Kennametal Co. of Ohio, with manufacturing facilities at Willoughby, Ohio, had a satisfactory and profitable year. Real progress was made there in efficiently producing large numbers of Kendex tools.

## *Capitalization*

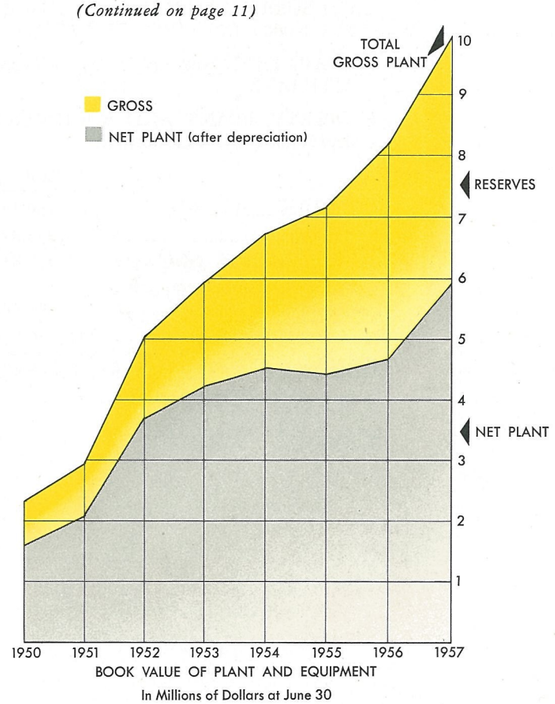
At June 30, 1957, capitalization consisted of $1,125,000 of 4½% notes payable, due in semi-annual installments of $125,000, and $14,984,947 of shareholders' equity. The book value per share at that date was $25.01, and represented a growth of $2.78 per share in shareholders' equity since June 30, 1956.

Broadening interest in our Company is indicated by the continuing growth in the number of shareholders, which increased from 1,477 to 1,780 during the year. Residents of 43 states, the District of Columbia and Canada now own Kennametal shares. Quarterly letters were initiated this year to keep our shareholders better informed.

## *Employee Relations*

Expenditures for pay and benefits rose again in 1957, by almost one-fourth, because of increased employment and higher wage and salary rates at all locations. The Retirement Income Plan was continued and extended during the year to cover eligible salaried employees at Port Coquitlam, B. C., and at the two subsidiary companies. The pension plan for hourly employees of plants in the

*(Continued on page 11)*



BOOK VALUE OF PLANT AND EQUIPMENT
In Millions of Dollars at June 30

# KENNAMETAL *Inc.* and subsidiaries

## consolidated balance sheets

June 30, 1957 and 1956

### assets

| | June 30 1957 | June 30 1956 |
|---|---|---|
| CURRENT ASSETS: | | |
| Cash | $ 1,763,117 | $ 2,068,083 |
| U. S. Treasury bills, at cost | 921,126 | 1,145,011 |
| Trade receivables, less reserves of $55,688 in 1957 and $20,198 in 1956 | 2,314,514 | 2,786,417 |
| Inventories, at lower of cost or market— | | |
| Finished goods and work in process | $ 4,700,397 | $ 4,286,856 |
| Raw materials and supplies | 1,674,601 | 1,405,350 |
| Total inventories | $ 6,374,998 | $ 5,692,206 |
| Total current assets | $11,373,755 | $11,691,717 |
| CASH SURRENDER VALUE OF INSURANCE (FACE VALUE $1,300,000) ON LIVES OF PRINCIPAL EXECUTIVES | 33,721 | 28,821 |
| PREPAID EXPENSES AND INVESTMENT IN FOREIGN AFFILIATE | 333,321 | 263,530 |
| PROPERTY, PLANT AND EQUIPMENT, at cost, less reserves for depreciation and amortization: | | |

| | Cost | Reserves | Net | | |
|---|---|---|---|---|---|
| Land | $ 169,541 | $ — | $ 169,541 | | |
| Buildings | 2,935,877 | 910,175 | 2,025,702 | | |
| Machinery and equipment | 5,935,831 | 2,234,319 | 3,701,512 | | |
| Mining buildings, equipment and claims | 998,935 | 972,550 | 26,385 | | |
| | $10,040,184 | $4,117,044 | $5,923,140 | 5,923,140 | 4,749,725 |
| GOODWILL, TRADE-MARKS, PATENTS, ETC., in process of amortization | | | | 398,187 | 518,187 |
| | | | | $18,062,124 | $17,251,980 |

### liabilities

| | June 30 1957 | June 30 1956 |
|---|---|---|
| CURRENT LIABILITIES: | | |
| Current maturities of long-term debt | $ 250,000 | $ — |
| Accounts payable | 1,124,089 | 1,228,316 |
| Dividends payable | 179,768 | — |
| Accrued liabilities | 648,320 | 733,937 |
| Federal and State taxes on income less U. S. Treasury bills of $2,562,012 in 1957, $1,443,854 in 1956 | — | 841,096 |
| Total current liabilities | $ 2,202,177 | $ 2,803,349 |
| LONG-TERM DEBT—4½% notes, due $125,000 semiannually, less current maturities shown above (see Note 1) | $ 875,000 | $ 1,125,000 |
| CAPITAL STOCK AND SURPLUS: | | |
| Common stock, $10 par value, authorized 750,000 shares, issued 603,225 shares | $ 6,032,250 | $ 6,032,250 |
| Paid-in surplus, excess of market over par value of 3,825 shares issued for acquisition of subsidiary | 43,988 | 43,988 |
| Earned surplus, per accompanying statement (see Note 1) | 9,013,709 | 7,352,393 |
| | $15,089,947 | $13,428,631 |
| Less—Treasury stock (4,000 shares at cost) | 105,000 | 105,000 |
| | $14,984,947 | $13,323,631 |
| | $18,062,124 | $17,251,980 |

*The accompanying notes (page 8) are an integral part of this statement.*

# KENNAMETAL *Inc.* and subsidiaries

## consolidated statements of income

*for the years ended June 30, 1957 and 1956*

| | June 30 1957 | June 30 1956 |
|---|---|---|
| SALES AND OTHER INCOME | $24,374,335 | $21,669,208 |
| COSTS AND OTHER CHARGES: | | |
| Wages, salaries and payroll taxes | $ 9,906,358 | $ 8,034,339 |
| Materials, supplies and services | 8,225,624 | 7,759,604 |
| Depreciation and amortization of plant and equipment | 654,522 | 702,129 |
| Interest expense on long-term debt | 50,685 | 60,745 |
| Amortization of goodwill, trade-marks, patents, etc. | 120,000 | 120,000 |
| Taxes, other than payroll taxes | 2,976,837 | 2,524,968 |
| | $21,934,026 | $19,201,785 |
| Net income for the year | $ 2,440,309 | $ 2,467,423 |

## consolidated earned surplus statement

*for the year ended June 30, 1957*

| | | |
|---|---|---|
| BALANCE AT BEGINNING OF YEAR | | $ 7,352,393 |
| NET INCOME | | 2,440,309 |
| | | $ 9,792,702 |
| DIVIDENDS: | | |
| $1.00 per share paid | $ 599,225 | |
| $ .30 per share payable August 20, 1957 | 179,768 | 778,993 |
| BALANCE AT END OF YEAR | | $ 9,013,709 |

### Notes to the financial statements— *June 30, 1957*

(1) The long-term loan agreement as amended provides that: (a) of the earned surplus of $9,013,709 at June 30, 1957, $2,443,552 is not available for cash dividends, and (b) net working capital may not be less than $4,000,000.

(2) The company has a noncontributory pension plan for hourly-rated employees of its Latrobe area plants which it has agreed to continue until November 1959. A noncontributory pension plan for hourly-rated employees at other locations, including Kennametal Co. of Ohio, was established during the year. A contributory retirement income plan for salaried employees is also in effect. The annual cost of the three plans including funding annually ten per cent of the past service liability, is approximately $375,000. Unfunded costs of past services for the plans were approximately $900,000 at June 30, 1957.



## auditors' certificate

ARTHUR ANDERSEN & CO.

GRANT BUILDING
PITTSBURGH 19

To the Board of Directors,
Kennametal Inc.:

We have examined the consolidated balance sheet of KENNAMETAL INC. (a Pennsylvania corporation) and subsidiaries as of June 30, 1957, and the related consolidated statements of income and earned surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying consolidated balance sheet and consolidated statements of income and earned surplus present fairly the financial position of Kennametal Inc. and subsidiaries as of June 30, 1957, and the results of their operations for the year then ended, and were prepared in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Arthur Andersen & Co.

Pittsburgh, Pennsylvania
August 3, 1957.

# KENNAMETAL *Inc.* and subsidiaries

## 10 years of progress

**fiscal year ending June 30**

| | 1957 | 1956 | 1955 | 1954 | 1953 | 1952 | 1951 | 1950 | 1949 | 1948 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sales and other income | $24,374,335 | $21,669,208 | $19,915,335 | $24,163,842 | $21,699,917 | $22,262,785 | $11,971,300 | $4,956,717 | $6,456,145 | $4,970,173 |
| Taxes, other than payroll taxes | $ 2,976,837 | $ 2,524,968 | $ 1,738,304 | $ 2,554,569 | $ 3,855,206 | $ 5,694,444 | $ 2,956,147 | $ 238,565 | $ 562,019 | $ 358,118 |
| Taxes, other than payroll taxes —per share* | $ 4.97 | $ 4.21 | $ 2.90 | $ 4.26 | $ 6.43 | $ 9.50 | $ 4.93 | $ .40 | $ .94 | $ .60 |
| Net income for the year | $ 2,440,309 | $ 2,467,423 | $ 1,803,738 | $ 1,737,949 | $ 1,651,872 | $ 2,217,364 | $ 1,667,070 | $ 179,239 | $ 626,294 | $ 414,370 |
| Net income for the year—per share* | $ 4.07 | $ 4.12 | $ 3.01 | $ 2.90 | $ 2.76 | $ 3.70 | $ 2.78 | $ .30 | $ 1.04 | $ .69 |
| Dividends paid | $ 599,225 | $ 601,269 | $ 499,500 | $ 499,500 | $ 498,845 | $ 448,829 | $ 212,288 | $ 199,800 | $ 199,800 | $ 116,700 |
| Dividends paid—per share* | $ 1.00 | $ 1.00 | $ .833 | $ .833 | $ .833 | $ .75 | $ .354 | $ .333 | $ .333 | $ .222 |
| Working capital | $ 9,171,578 | $ 8,888,368 | $ 7,339,271 | $ 6,359,966 | $ 5,583,661 | $ 5,049,754 | $ 3,197,136 | $1,963,001 | $1,886,948 | $1,721,472 |
| Ratio, current assets to current liabilities | 5.2 | 4.2 | 3.0 | 2.8 | 2.0 | 2.0 | 2.2 | 3.8 | 3.3 | 3.2 |
| Additions to plant and equipment—net | $ 1,827,937 | $ 978,458 | $ 524,495 | $ 847,761 | $ 890,474 | $ 1,560,265 | $ 604,261 | $ 111,895 | $ 402,789 | $ 155,799 |
| Depreciation and amortization of plant and equipment | $ 654,522 | $ 702,129 | $ 616,853 | $ 507,135 | $ 426,020 | $ 334,442 | $ 170,415 | $ 150,661 | $ 145,917 | $ 115,769 |
| Plant and equipment—net | $ 5,923,140 | $ 4,749,725 | $ 4,473,396 | $ 4,565,754 | $ 4,225,128 | $ 3,760,674 | $ 2,067,011 | $1,633,165 | $1,671,928 | $1,399,038 |
| Long-term debt | $ 875,000 | $ 1,125,000 | $ 1,250,000 | $ 1,750,000 | $ 2,000,000 | $ 2,250,000 | $ 675,000 | $ 20,000 | $ 75,000 | $ 180,000 |
| Shareholders' equity | $14,984,947 | $13,323,631 | $11,480,239 | $10,176,001 | $ 8,937,552 | $ 7,778,174 | $ 6,163,174 | $4,708,391 | $4,728,952 | $4,302,458 |
| Number of shares outstanding (end of year) | 599,225 | 599,225 | 599,400 | 499,500 | 499,500 | 499,500 | 249,750 | 199,800 | 199,800 | 33,300 |
| Book value per share* | $ 25.01 | $ 22.23 | $ 19.15 | $ 16.98 | $ 14.91 | $ 12.98 | $ 10.28 | $ 7.86 | $ 7.89 | $ 7.18 |
| Number of registered shareholders (end of year) | 1,780 | 1,477 | 1,272 | 983 | 865 | 427 | 250 | 187 | 137 | 112 |
| Number of employees (end of year) | 1,712 | 1,654 | 1,516 | 1,234 | 1,444 | 1,235 | 867 | 598 | 642 | 587 |

*Adjusted to reflect increased number of shares resulting from a 6 for 1 stock split in June 1949; a 5 for 4 stock split in June 1951; a 2 for 1 stock split in February 1952 and a 6 for 5 stock split in June 1955.





Latrobe area likewise remained in effect; the agreement with the United Mine Workers calls for the continuation of this plan until November, 1959. For employees at Bedford, Detroit, Port Coquitlam, and Willoughby (Kennametal Co. of Ohio), a General Hourly Pension Plan, a non-contributory plan being funded under a trust agreement, was established during the year. The current annual cost to the Company and its subsidiaries of these three plans, including funding annually ten per cent of the past service liability, is approximately $375,000.

During the year, the Company entered into agreements with certain of its principal executives, reserving exclusively for the Company under certain conditions the services of each individual on a consulting basis for a period of ten years following his retirement from active service. Payments to be made during this period (approximately one-fourth of the present basic salaries) will not affect eligibility to receive benefits under the existing Retirement Income Plan. This action is believed to be a desirable step towards retaining the services of these key employees, and will make their technical knowledge available to the Company for an additional period.

This was a year of steady and high employment with no repetition of the costly work stoppage which marred operations in the Fall of 1955. A three-year contract was signed with the United Mine Workers, covering hourly employees in the Latrobe area plants, and providing for annual wage increases and other benefits, effective November, 1956. The status of this contract is now uncertain as a result of an election held on July 24, 1957, by the National Labor Relations Board, whereby the International Union of Automobile, Aircraft and Agricultural Workers of America (UAW) was elected as the bargaining agent at these plants. An election at the Detroit plant was held the same day, but our employees chose not to be represented by any union.

### *Sales Developments of the Year*

For the third successive year, sales of our regular products to the metalworking industries were up. The substantial 1957 gain was brought about principally by the increased general acceptance of our hard carbide products and their greater utilization in metal cutting in the aircraft and automotive industries.

The rapid adoption of Kendex insert tools played an important part in this sales expansion. The Kendex principle of throw-away inserts, with six or eight indexable, factory-ground edges, is an important factor in increasing productivity per machine and per manhour. It has reduced machine time for tool changing and has eliminated costly tool regrinding. This is especially significant in highly automated production lines.

Kennametal's broad selection of metal-cutting grades, each developed for specific machining conditions, covers the full range of machining requirements. Grade K21 is now widely used as a general purpose steel-cutting grade, and Grade K4H has also been widely adopted for a broad range of steel cutting applications. The harder Grades K5H and K7H are filling a growing need for higher velocity cutting of specialty steels.

Kennametal and Kentanium are being applied at an accelerated pace to uses other than metal cutting, such as in shanks for gun drills, solid boring bars and grinding quills. The high stiffness of these compositions relative to steel has proven an advantage in many cases, and greater recognition of the value of this quality is expected. Other new uses include many types of wear parts, rotary seals, valve parts, dies and large molds.

Sales volume in the Mining Tool Division increased slightly, but fell short of expectations because of conditions in the industry. Several new mining tools have been successfully developed which help make continuous mining a reality and cut costs for the coal mining industry. The development of large rock bits is also being pushed.

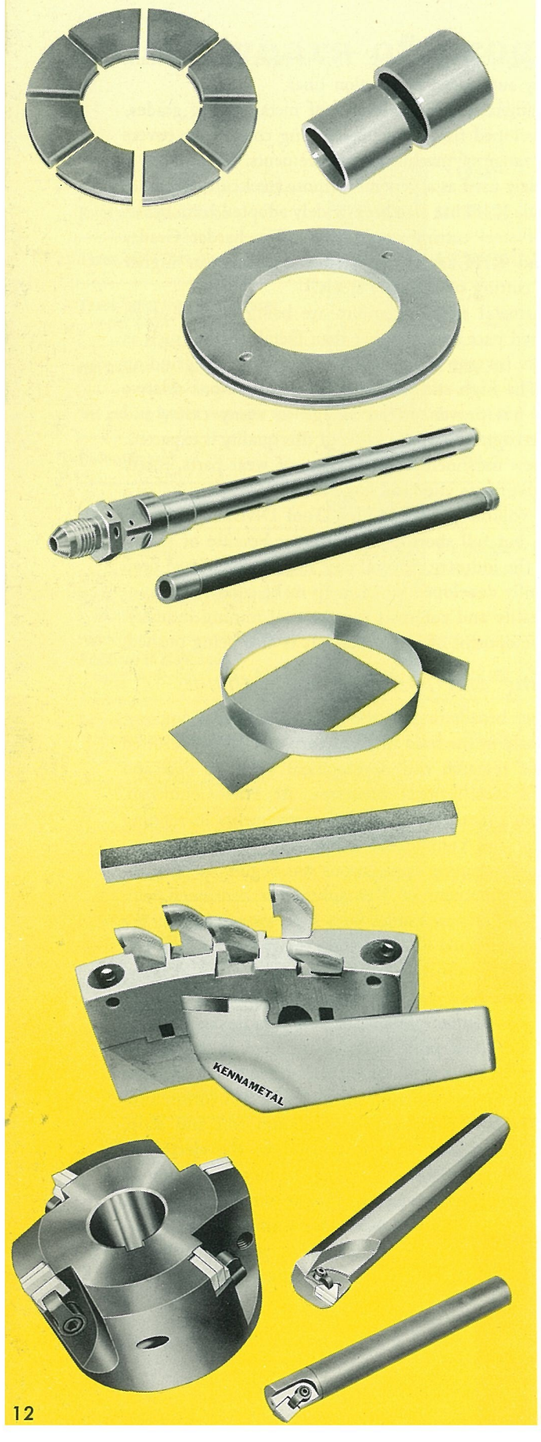
### *Refining and Metallurgical Activities*

Further broadening of the products of the Company, particularly in the field of refractory metals, has resulted from our research and development work on new and improved metallurgical processes. At Port Coquitlam, B. C., our plant made further improvements in refining processes, and commercial production of compositions designed for mining applications was begun.

The development of Kentanium has continued with the addition of new grades with superior properties. We have also perfected techniques necessary for welding and brazing Kentanium to other alloys, as required in many applications. New and improved fabrication techniques for complex Kentanium shapes were also devised.

Laboratory and pilot work has resulted in the perfection of practical methods of production of niobium (columbium) and tantalum metal in certain forms. Production is now beginning on tantalum foil and strip, which material is in strong demand by the electronics industry. As for niobium, very satisfactory production of arc-melting electrodes in quantity was carried out, and sales volume in 1957 exceeded one million dollars. Further large orders, however, are not at present forthcoming and while the future of this metal may be promising, it is not clear.

# partners in progress




Our sales representatives, engineers and research people are constantly working with customers to help solve the complex materials problems of industry. The benefits from this "partnership in progress" of industry and Kennametal are evident in a few newly-developed products shown here.

Bearings, seals and thrust runners of Kennametal and Kentanium (illustrated at left) are being applied in pumps to handle liquid metals for atomic power installations. Rotary pump seals, valving and other parts are being used in the aircraft, petroleum and chemical industries to handle hot or cold liquids and gases under the most severe abrasive, corrosive and thermal shock conditions.

Small tubes of Kentanium are being used in substantial quantities as temperature sensing elements for thermostats in jet aircraft power units. These vital components must control temperatures within very close limits and withstand the destructive forces of the jet gases at 2000°F.

Considerable progress has been made in making high-purity niobium (columbium) and tantalum metals. During the year, niobium bars for arc-melting electrodes have been sold in quantity. Our most recent development in this field is the production of 99.9% tantalum in sheet form for use in building capacitors and for other applications in the electronics industry.

A new taper shank cutter bit introduced several months ago for a widely-used type of continuous mining machine is now being adapted for several other boring type machines for cutting coal. Advantages include reduction of bit costs per ton and less downtime of expensive machines for bit changing.

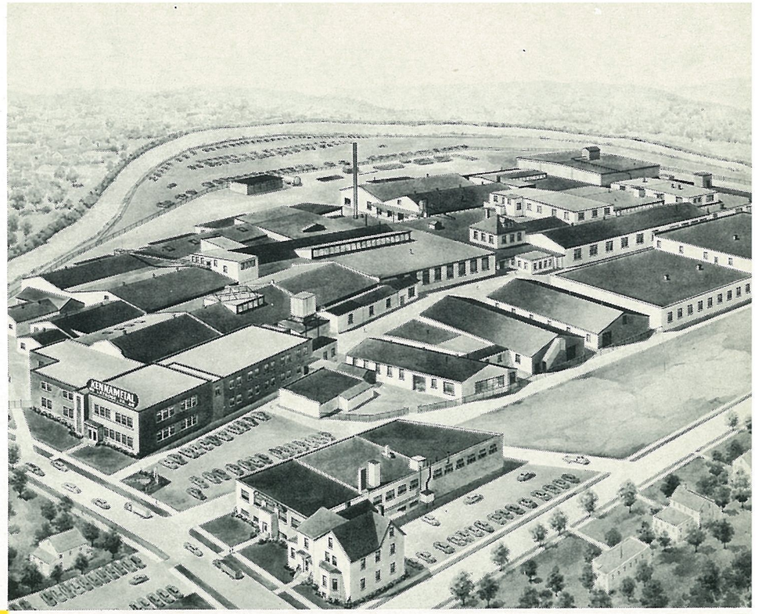
Adaptation of the Kendex principle of "throw-away" insert tooling was greatly extended during the year, especially in industries where extreme accuracy and high finishes are required on many parts. Because of its many advantages, the Kendex principle has been adapted for many specialized operations such as milling, profile machining on tracer lathes, and for high production boring. The bar at bottom is encased with Kennametal to provide greater rigidity in boring long holes.

*Industry and Kennametal . . . Partners in Progress*



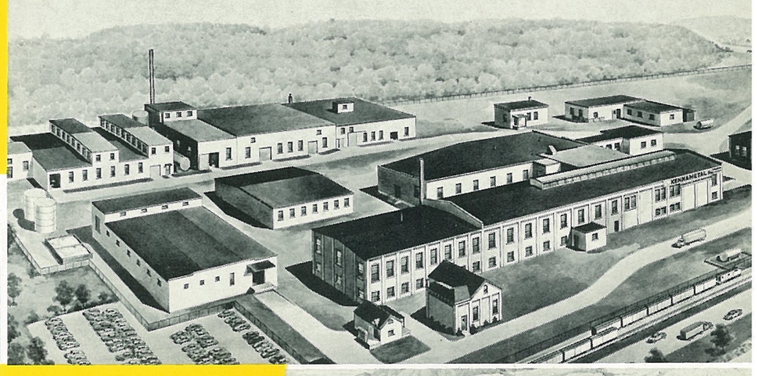
## KENNAMETAL FACILITIES

Kennametal is engaged in the extractive metallurgy of tungsten, tantalum, columbium, cobalt and certain other elements. From these basic raw materials it produces hard carbides for use as metal cutting, wear and heat resisting materials for a wide variety of industries and mining. It also sells certain of these elements in various stages including those of highest purity.

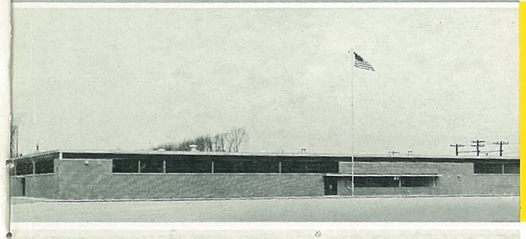


MAIN PLANT AND GENERAL OFFICES
Latrobe, Pennsylvania

REFINING AND METALLURGICAL DIVISION
Kingston Station, Pa.

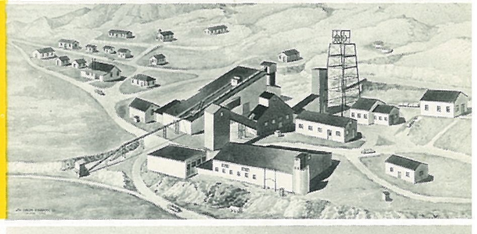


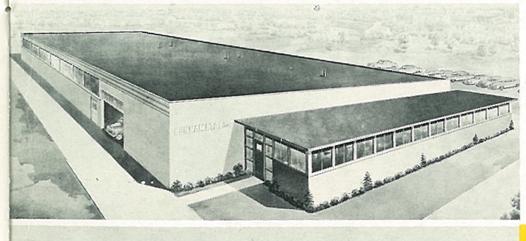
CHESTNUT RIDGE
Plant No. 2



CHESTNUT RIDGE
Plant No. 1

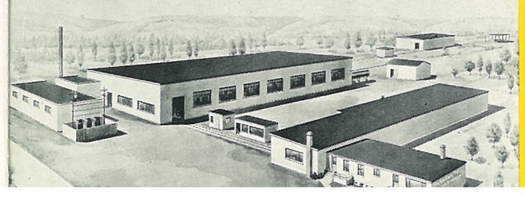
NEVADA SCHEELITE
TUNGSTEN MINE AND MILL
Fallon, Nevada





DETROIT PLANT
Oak Park, Michigan

KENNAMETAL CO. OF OHIO
Kendex and Clamped Tools



METALLURGICAL REFINERY
Port Coquitlam,
British Columbia

MINING TOOL DIVISION
Bedford, Pennsylvania